Urban mobility and innovation

a prospective in sustainable transport

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RATP/Prospective and Innovative Design

INTA 33- Innovative urban environments
2009, october 5th
-/-

Innovate?
Urban transport, vector of Cities transformation?

- From city to urban area
  - Horizontal expansion (tramway)
  - Vertical expansion (lift)

- Urban navigation
  - Nolli map (Roma)
  - Invisible network (London)
  - Digital cities

- Everyday life
  - Fragmentation of life rhythms
  - Exclusions
What could be urban innovation?

- Sustainable Development

- Information & communication technologies

Push

Pull
C-K theory for innovative design

1. Intense, repeated & competitive innovation
   - Technologies
   - Values/Uses
   - Regulations
   - Funding
   - Competitors

2. Identity crisis of objects
   - Open functional space (β-city)
   - New competencies
   - New partnerships
   - Economics models

3. Need for innovation platforms
   - Off-shore innovation
   - Light innovation (social innovations)
Double expansion C - K

- New concepts
- Validated concepts
- Old K
- New K
Four operators of innovative design

C

« From the known to the unknown »

Refining, choosing, structuring

K

Deduction, optimizing, modelling,…

« From the unknown to the known »
Defining an exploration strategy

Known objects

Systems that can be expressed after C-phase

Systems that can be expressed after K-phase

New possible objects

Concept projector
II- From transport to mobility
a 3D- radical change

II-1- Uses
II-2- Tools and means
II-3- Actors & newcomers
II-2- Radical change in uses
I- Radical change in uses

From transport to mobility, a paradigmatic shift

Transport
- flow / transported (passive)

Mobility
- individual / mobile (active)
I- Radical in uses of mobility/city

- **Personal** mobility
  - Personnalized

- **Developmental** mobility
  - Mobility as therapy
  - Mobility as personal development

Impedimenta

15-35 ans
Aetif
I- Radical change in uses

« Self-mobile » person new relations to

- Time
- Space
- Body
- Technologies
- Others
- Environment
I. Radical change of uses and values

• Homo mobilis (as ever!)

• Connected (HyperUrbain I)

• New urbanity

• But seniors, deprived areas

Cognitive sciences results on navigation

Egocentered navigation

Allocentered navigation

Cognitive sciences results on navigation
2. New relations to time

- Intensification (work)
- Diversification (leisure)
- Optimization /real-time

- Transport = wasted time
- Time distance (VKm)
- Time substance (contacts)

- Times in the city (INTA)
- New urban pace (events, night, sports, …)
5. New relations to space

- Spaces & places:
  - high social density places
  - HyperUrbain II

- Cognitive City
  - Co-working spaces
  - Legible London
  - Musetrek II (October 6)

- Transport as a vector of urban district regeneration
  - From O/D to place as a stage, a network hub
Map is becoming territory!

• My map
  – Social map     GPS+ tags
  – Personal map  Favorites+ memory
  – Emotional map Events
  – Action map    Map, tag& track

• Adaptative city
  – reveals infras according to activities
Still maps?

Madonna Concert
Cellphone activity in Stadio Olimpico Rome 2006-08-06

19:00
night morning afternoon evening

...implicites
Historical radical changes in City views

.01 | Skeleton & Skin
Pre-industrial cities consisted essentially of skeleton and skin. They provided shelter and protection, and through stacking floors vertically they enabled intensification of land use.

.02 | Artificial Physiologies
Cities of the industrial era acquired extensive and sophisticated artificial physiologies: water supply and drainage systems, energy supply systems, and mechanized transportation.

.03 | Nervous system
Cities of the digital information era are developing integrated electronic nervous systems. Cities starts to operate as intelligent organisms that make coordinated responses to changing conditions and needs.

WJ Mitchell/ F. Casalegno (MIT)
3. New relations to body

- From comfort

- To
  - Health (TAPAS project)
  - Pleasure
  - Reconsidering crowds

Public health & ethology of mobility
New relations to technologies

« L'introduction des réseaux numériques conduit à une refonte complète des schémas urbains. C'est une période passionnante pour les concepteurs et les architectes aventurieux, car il doivent imaginer des systèmes hybrides, qui se composeront d’une part de lieux physiques et de lieux virtuels, d’autre part de relations de transport et de télécommunications. L’urbain, au-delà du bâti, devient un système nerveux électronique. »
WILLIAM J. MITCHELL, architecte et professeur au MIT, né en 1943

RATP Exhibit in Luxembourg Station dedicated to urban ecology
Why web metaphor is so powerful?

Scalabilité

Effets de réseaux

Données

Ouverture

Cocréation
New relations to technologies

- Mobility/City OS
- PMA (Augmented Mobility Person)
  - Location-based services
  - Time-based services

Google Beta-city?

Ubiquitous communicator (Ginza)
Ubiquitous computing

- Urban sensing
  - Users as social sensors
- Rewards
  - Self-regulation (-15% trips/carbon free)
  - Participatory city management
4. New relations to others

- Meetings
- Social networks (*smart mobs*)
6. New relations to environment

A responsible mobility

• Preservation or conservation?

• Cleantech (more than GreenTech!)

• Behavioral design (So Watt -15%)
II-1- Radical change of tools and means
**Integrated diversity: towards Global Urban Mobility system**

**Multimodality:**

*Trip diversity: a principle of urban ecology*

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**Trip diversity / urban ecosystem**

**Bio-diversity / natural ecosystem**

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**Modal redundancy**
Walking at the core heart of mobility

An active mode of transport

• Hidden dimension of transport & urbanism
  – 54% of daily trips in inner Paris

• An efficient mobility system
  – 58% of trips <1km are quicker walking vs subway

• First step to global system of mobility
  – Walking as an Individual Public Transport mode?

Research program on « pedestrian city, a fast city »
**London Walking: 7 million trips by 2025**

- **Actual**
  - 5.7m

- **Forecast**
  - 2000
  - 2005
  - 2010
  - 2015
  - 2020
  - 2025
  - 7m

- Over 50% of tube journeys in Central London quicker on foot
- 1.5m car trips under 1km in London today
- Need to create an attractive environment for walking

- 22% mode share
- 25% growth vs 2000

**Mayor of London**
Walk-Lines on London tube map

London Tube Map with Walk-Lines: sometimes it's quicker to walk
Modeling for urban walking strategy

Slow walk (2 km/h)
- 93 trips quicker walking vs subway
- Nearby stations but « far away » using subway
Modeling for urban walking strategy

Regular walking (4 km/h)
- 1168 trips quicker walking vs subway
- 2% of all subway trips
- 58% of <1 km length trips

1168 trips
56 000 trips
Modeling for urban walking strategy

And bike (10 km/h)?
- 21,000 trips quicker biking vs subway
- 40% of all subway trips
- 84% of <4km length trips
Walking (4 km/h) & delay (15’)
- 6755 trips quicker walking vs subway
- 12.7% of all subway trips
Nike, City as stadium!
II- Radical change in tools & means

• Innovation
  – Systemic
  – Margins

• Transmodality
Innovation: ‘peripheral’ et ‘digital’

Info-empowerment
Info-software
Info-browser
Info-2.0

Users empowerment
Mobility pedagogy
Exchange services
Neighbourhood services

Software
Service

Transport power
Non mobile (Places)

Network Management
Hubs
Re-creating city by places
New dimensions of service

1. Empowerment of end users
2. Services for social exchange
3. Service of neighbourhood

"peripheral" to transport power
(speed, capacity, scope..)
Mobility pedagogy

- **A modern value?**
  - Social integration (work, leisure, …)
  - Transport systems = social norms
  - Reduced competence

- **Developing individual capability**
  - Language
  - Orientation/navigation
  - Cognitive competencies
  - Health
  - Previous experiences

- **Learning mobility**
  - Mobility workshops Adults/elders
  - Mobility classes Children
Navigation for impaired people
Social freight

- Mumbai in Paris!
- Principles:
  - Low cost deliveries of small parcels (1,5€ each)
  - Creating « first step » works
  - Based on use of Public Transport (Carbon Print)
- Requesters: elders, working people,…
Bombay à Paris! La livraison à 1-2€

DEMANDES LATENTES

Pharmaciens
Services à domicile
Pressing
Commerces de bouche
Librairies indépendantes

INTERMEDIATION

Mairies, associations
Agents RATP

Partenaires
HC Solidarités actives
Ville de Paris
CCIP
CDC (ANSP)
RATP
Aquarelle
AXA
....
Economizing mobility

Designing to federate innovations for

- **Optimizing transport offer**
  - *useful mobility*

- **Developing collaborative info. mobility**
  - *Mobility 2.0*

**Car park as regulating hub**

**Mobile co-working spaces**

**Mobility Agency**

**Choosing flat according to PT & CO2 print**

**2.0 end-user IS on mobility (New York City)**
Beyond *info-conformation* (time-space signage)

1. Info-empowerment  
   Smart mobility
2. Info-software  
   pure mean of transport
3. Info-browser  
   Life on-line
4. Info-’2.0  
   Social networking

New mix between **home-work-mobility-information**

Information revolution
Love transport on T3 (Transports Amoureux)

Focused social networking

Meaningful mobility made by narrative trips
- Others
- Transport
- City

Mobile community
2. Innovation: “peripheral” and “intangible”

- Access, connection, interface
- **Spaces of transport** (stations, stops, hubs), **socially important places in city**
- From Origin/Destination (O/D) to rest stop
  reverse hierarchy of place over travel

*From stop to great hub*, a **key innovation field**, with major business issues

**Immobile**
Hub
Agora
Mall
Bus stations as 3D-hubs

- 3D-hub
  - Territorial hub
  - Mobile hub
  - Personal hub

- Interactive station
Smart city

- City and smart parking
  - Modal redondancy
  - Organizing modal chain

- Chronos, RATP, Vinci Park

- Results :
  - CityRail
  - Mobiway
III- Major changes in actors system

- Places operators
- Software operators
- Services operators
- Users/ citizens
and Google!

• Google interested by GM?
  – Beta cars
    • design by users
    • plate-form for innovations
  – Cars as click enablers
  – Navigation & entertainment

• Google, local operator?
  – 32 bus lines!

• New York City Transit/ MTA!
Transport spaces as innovation territories

- Design by users
  - RATP Lab
  - BART APIs

- Design with others
  - Xquisit = co-design with partners
  - Incubators inside transit flows?
Metaphors for livable city/mobility

- Plug & play
- Open Source

Intensity
Diversity

Thanks